Explosives Detection Personnel Portals

The Need

Many facilities with a high volume of pedestrian traffic need a way to detect personnel who are carrying concealed explosives or have been handling explosives. The Explosives Detection Personnel Portal can be used to prevent terrorist acts in the aviation industry and to provide explosives detection in transportation applications and at high-risk facilities such as federal buildings, embassies, nuclear facilities, prisons, courtrooms, and post offices.

Commercialized Version of Explosives Detection Personnel Portal with IMS Detection

Description

The Explosives Detection Personnel Portal is a walk-through system for rapidly screening personnel for trace amounts of explosives at sites such as airports. The portal uses Sandia-patented sample collection and preconcentration technology to rapidly force air flows around a person and collect vapor and particles. The explosives material is collected, concentrated, and then identified using a commercial chemical detector. The original version uses a commercial ion mobility spectrometer and the latest prototype uses a commercial mass spectrometer for explosives detection. Portal research has been funded by the Federal Aviation Administration (FAA), now the Transportation Security Administration (TSA), and the Department of Energy's Office of Security.

Prototype Portal using Mass Spectrometry Detection

Features

- Detects trace amounts of a variety of explosives
- High throughput rate
- Non-invasive
- Does not require personnel to remove shoes or outer clothing
- Can be configured to detect illegal drugs

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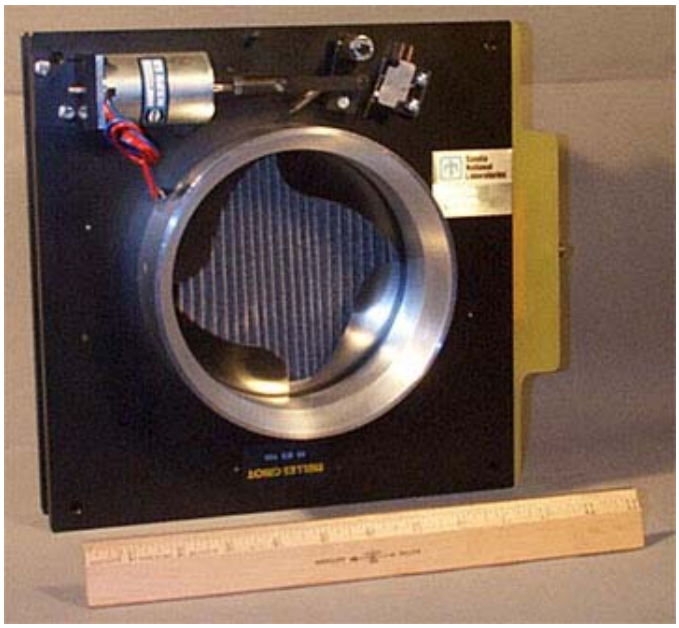

Sandia's Patented Preconcentrator

Operation

A two-stage preconcentrator collects heavy organic molecules typically found in high explosives from very large, dilute air streams. The preconcentrator draws in a large volume of air, collects heavy organic compounds from the air stream onto a filter, then vaporizes these compounds into a smaller parcel of air that is then delivered to the commercial chemical detector. Using this patented approach, Sandia has been able to sample the large volumes of air necessary to screen personnel for explosives.

Availability

Sandia's patented air sampling and preconcentration technologies have been licensed to Smiths Detection for applications in personnel portals with ion mobility spectrometry (IMS) detection. The Smiths Detection Sentinel is in use at the CN Tower in Toronto, Canada, the world's tallest building. Also, British Airports Authority (BAA) has conducted trials at Heathrow Airport screening volunteer passengers for explosives. In May 2004, the Smiths Detection Sentinel Portal passed laboratory testing by the Transportation Security Administration (TSA).

The portal prototype using mass spectrometry was tested at the FAA Technology Center and Idaho National Engineering and Environmental Laboratory (INEEL) in 2002.

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